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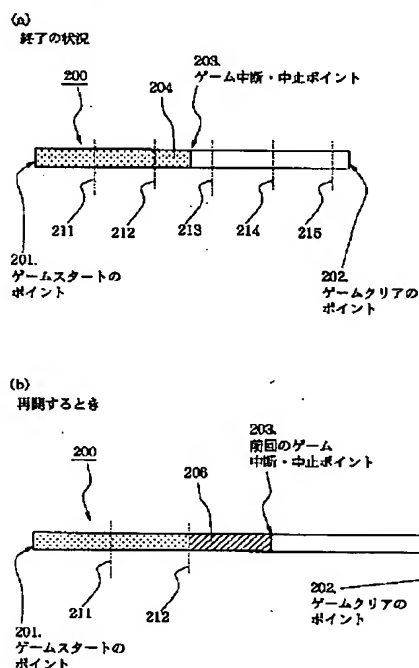
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(54)【発明の名称】 ゲーム装置および該ゲーム装置に係るプログラムを記憶した記憶媒体

(57)【要約】

【課題】ゲーム終了した後そのゲームを再開するとき、プレイヤーが再度同じ操作を行なうことなく、また冗長に前回のすべての操作を自動的に再現することなく、必要最小限な分だけ再現して、前回までのゲームの流れをプレイヤーが容易に把握することができるようにしたゲーム装置および該ゲーム装置に係るプログラムを記憶した記憶媒体を提供することを目的とする。

【解決手段】ゲーム中、プレイヤーが入力したキー入力データやキャラクターのポジションなどを表すゲームデータを記憶する(204)。ゲームを終了した後、再開する際には、ゲーム進行の流れの中の所定の区切り位置(212)から前回ゲームが終了した位置(203)までのゲームデータを読み出し、それらのゲームデータに基づいてゲーム画面を自動的に再現(206)した後、前回ゲームが終了した位置(203)からプレイヤーのコントロールによるゲームを再開する。



【特許請求の範囲】

【請求項 1】プレイヤーが操作するための操作手段と、ゲーム画面を表示するための表示手段とが接続されたゲーム装置であって、

ゲーム実行中に発生する各種のゲームデータを順次記憶する記憶手段と、

ゲームが終了した後、該ゲームを再開する際、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲームデータを前記記憶手段から読み出し、該読み出したゲームデータに基づいて自動的にゲーム画面を再現する手段と、

前記再現が終わった後、前回ゲームが終了した位置から、プレイヤーのコントロールによるゲームを再開する手段とを備えたことを特徴とするゲーム装置。

【請求項 2】プレイヤーが操作するための操作手段と、ゲーム画面を表示するための表示手段とが接続されたゲーム装置であって、

ゲーム実行中に発生する各種のゲームデータを記憶する記憶手段であって、ゲーム装置本体の電源がオフされた後も記憶内容が消失しないものと、

ゲームが終了した後、該ゲームを再開する際、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲームデータを前記記憶手段から読み出し、該読み出したゲームデータに基づいて自動的にゲーム画面を再現する手段と、

前記再現が終わった後、前回ゲームが終了した位置から、プレイヤーのコントロールによるゲームを再開する手段とを備えたことを特徴とするゲーム装置。

【請求項 3】プレイヤーが操作するための操作手段と、ゲーム画面を表示するための表示手段とが接続されたゲーム装置で実行するゲームプログラムを記憶した記憶媒体であって、

該ゲームプログラムは、

ゲーム実行中に発生する各種のゲームデータを所定の記憶手段に記憶するステップと、

ゲームが終了した後、該ゲームを再開する際、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲームデータを前記記憶手段から読み出し、該読み出したゲームデータに基づいて自動的にゲーム画面を再現するステップと、

前記再現が終わった後、前回ゲームが終了した位置から、プレイヤーのコントロールによるゲームを再開するステップとを備えたものであることを特徴とするゲームプログラムを記憶した記憶媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、ゲーム装置および該ゲーム装置に係るプログラムを記憶した記憶媒体に関する。

【0002】

【従来の技術】従来より、家庭用ビデオゲーム装置やパーソナルコンピュータで動作する各種のゲームが知られている。これらのゲームにおいて、ゲーム終了の要因としては、そのゲームに特有のゲーム制限による終了とプレイヤーの意思による終了とがある。ゲーム制限による終了とは、例えば、ゲーム中でプレイヤーが操作しているプレイヤーキャラクタのライフポイントがなくなったり、制限時間切れになった場合などである。プレイヤーの意思による終了とは、プレイヤーが意識的にゲームを中断・中止することである。

【0003】従来の技術では、このような各種の要因でゲーム終了した後、ゲームを再開するときには、ゲーム終了した位置から再開するのが基本的な方式であった。例えば、アクションゲームであればミスをしてゲームオーバーになった面（ステージ）から再開するし、ロールプレイングゲームであればプレイヤーキャラクタのライフポイントがなくなったところから再開する、といった具合である。また、ゲーム終了した位置から少し戻った位置（ゲーム中であらかじめ決められた区切り位置）からゲームを再開できるようにしたものもある。さらに、ロールプレイングゲームなどでは、プレイヤー自らがゲームが進行したところの位置をデータとしてセーブしておき、ゲーム再開時に該データをロードして、その位置からゲームを再開できるようにしたものもある。

【0004】特開平 7 - 3 0 3 7 6 0 号公報には、ゲームプレイ制限時間を設定し、その時間が経過したときゲームを終了させるとともに、ゲーム開始からゲーム終了までのキー操作をすべて所定の記憶装置に記憶し、ゲーム再開時には該記憶装置に記憶されているキー操作情報に基づいて前回のゲーム操作を自動的に再現するゲーム装置が開示されている。これによれば、プレイヤーがゲームを再開するときに、前回行なったキー操作がすべて再現されゲームが自動的にリプレイされるので、前回のゲームの流れを把握しやすくなる、という効果がある。

【0005】

【発明が解決しようとする課題】しかしながら、ゲーム終了した位置から再開する方式では、前回に行なったゲームの流れをプレイヤーが把握することが困難であるという問題点がある。例えば、ロールプレイングゲームなどでゲーム終了した位置から再開しても、プレイヤーはそこまでのシナリオの流れを思い出すことができない場合がある。

【0006】また、ゲーム終了した位置から少し戻った位置からゲームを再開する方式では、プレイヤーは前回ゲームを終了した位置まで再度前回と同じ操作を行わなくてはならないという問題点がある。例えば、アクションゲームで難易度の高い部分をクリアしていたとしても、ゲーム再開時にその少し前から再開しなければならず、プレイヤーが再度その難易度の高い部分をクリアしなければならない場合などがある。また、ロールプレイ

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イングゲームでは、前回行なったプレイヤーキャラクタの動作を再度繰り返すキー操作を行なわなければならない場合がある。プレイヤー自らがゲームの位置をセーブし、ゲーム再開時にロードしてゲームを再開する方式でも、やはりセーブした位置から再度同じ操作を行なわなければならない。また、プレイヤーがセーブを忘れた場合は、かなり前に戻らざるを得ない場合もある。

【0007】上記特開平 7-303760 号公報に記載の方式では、ゲーム再開時に、前回のゲーム操作がすべて再現されるので、プレイヤーはそこまでのゲームの流れを容易に把握できる。しかし、この方式では、前回のキー操作をすべて再現するので、再現が冗長になる場合がある。例えば、ロールプレイングゲームでは、プレイヤーキャラクタが必要なアイテムを取得するため、該アイテムをあちこち探し回る操作を行ない、その結果、所定の場所でそのアイテムを取得できる場合がある。このような場合でも、その操作すべてが記憶され、ゲーム再開時に再現されるので、プレイヤーは該アイテムがある場所を知っていても、前回の操作すべての再現を見せられることになる。また、前回行なったキー操作が大量にある場合でも、そのキー操作全部を再現するので、プレイヤーは長い間その再現を見せられる場合がある。

【0008】本発明は、上述の従来形における問題点に鑑み、ゲーム終了した後そのゲームを再開するときに、プレイヤーが再度同じ操作を行なうことなく、また冗長に前回のすべての操作を自動的に再現することなく、必要最小限な分だけ再現して、前回までのゲームの流れをプレイヤーが容易に把握することができるようにしたゲーム装置および該ゲーム装置に係るプログラムを記憶した記憶媒体を提供することを目的とする。

【0009】

【課題を解決するための手段】上記目的を達成するため、請求項 1 に係る発明は、プレイヤーが操作するための操作手段と、ゲーム画面を表示するための表示手段とが接続されたゲーム装置であって、ゲーム実行中に発生する各種のゲームデータを順次記憶する記憶手段と、ゲームが終了した後、該ゲームを再開する際、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲームデータを前記記憶手段から読み出し、該読み出したゲームデータに基づいて自動的にゲーム画面を再現する手段と、前記再現が終わった後、前回ゲームが終了した位置から、プレイヤーのコントロールによるゲームを再開する手段とを備えたことを特徴とする。

【0010】請求項 2 に係る発明は、プレイヤーが操作するための操作手段と、ゲーム画面を表示するための表示手段とが接続されたゲーム装置であって、ゲーム実行中に発生する各種のゲームデータを記憶する記憶手段であって、ゲーム装置本体の電源がオフされた後も記憶内容が消失しないものと、ゲームが終了した後、該ゲーム

を再開する際、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲームデータを前記記憶手段から読み出し、該読み出したゲームデータに基づいて自動的にゲーム画面を再現する手段と、前記再現が終わった後、前回ゲームが終了した位置から、プレイヤーのコントロールによるゲームを再開する手段とを備えたことを特徴とする。

【0011】請求項 3 に係る発明は、プレイヤーが操作するための操作手段と、ゲーム画面を表示するための表示手段とが接続されたゲーム装置で実行するゲームプログラムを記憶した記憶媒体であって、該ゲームプログラムは、ゲーム実行中に発生する各種のゲームデータを所定の記憶手段に記憶するステップと、ゲームが終了した後、該ゲームを再開する際、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲームデータを前記記憶手段から読み出し、該読み出したゲームデータに基づいて自動的にゲーム画面を再現するステップと、前記再現が終わった後、前回ゲームが終了した位置から、プレイヤーのコントロールによるゲームを再開するステップとを備えたものであることを特徴とする。

【0012】上記ゲーム再開時におけるゲーム画面の再現は、読み出したゲームデータに基づいて、加工（加工の例は発明の実施の形態の欄で説明する）を行なって再現するようにするとよい。

【0013】

【発明の実施の形態】以下、図面を用いて、本発明の実施の形態を説明する。

【0014】図 1 は、本発明に係るゲーム装置のハードウェア構成例を示す。このゲーム装置は、ゲーム装置本体 100、表示装置（CRT）101、スピーカー（SP）102、操作部 103、および補助記憶装置 104 を備えている。ゲーム装置本体 100 は、中央処理装置（CPU）111、ランダムアクセスメモリ（RAM）112、リードオンリメモリ（ROM）113、ビデオ RAM（VRAM）114、画像制御部 115、音声合成部 116、外部記憶装置 117、および入出力（I/O）制御部 118、119 を備えている。なお、この実施の形態では、ゲーム装置本体 100 は通常の実用ビデオゲーム装置であるものとして、以下説明する。ただし、本発明は、家庭用ビデオゲーム装置に限らず、パーソナルコンピュータでゲームソフトを実行する場合など、ゲーム終了した後そのゲームを再開することのできる各種のゲーム（例えば、サッカー、野球などのスポーツゲームや、アクションゲーム、シューティングゲームなど）に適用可能である。

【0015】ゲーム装置本体 100 において、CPU 111 はこのゲーム装置全体の動作を制御する中央演算処理装置である。RAM 112 は、CPU 111 がワーク領域などに使用する読み出しおよび書き込み可能なメモ

りである。ROM 1 1 3 は、CPU 1 1 1 が実行する各種の制御プログラム（BIOS : Basic Input/Output System）などを格納する読み出し専用メモリである。VRAM 1 1 4 は、CRT 1 0 1 に表示する文字や図形や画像のデータを CPU 1 1 1 から書き込むためのビデオ RAM 領域である。画像制御部 1 1 5 は、CPU 1 1 1 が VRAM 1 1 4 に書き込んだ各種のデータに基づいて、CRT 1 0 1 に文字や図形や画像を表示する制御を行なう。音声合成部 1 1 6 は、CPU 1 1 1 の指示に基づいて、外部記憶装置 1 1 7 から音声データを読み出し、あるいは音声データを合成して、スピーカ 1 0 2 に出力する SPU（サウンドプロセッシングユニット）である。外部記憶装置 1 1 7 は、着脱可能な記憶媒体をセットし、該記憶媒体から各種のデータを読み込む装置であり、例えば CD-ROM 装置などである。I/O 制御部 1 1 8 は CPU 1 1 1 と操作部 1 0 3 との間のインターフェース、I/O 制御部 1 1 9 は CPU 1 1 1 と補助記憶装置 1 0 4 との間のインターフェースである。操作部 1 0 3 は、プレイヤーが操作するための入力装置（コントローラ）である。補助記憶装置 1 0 4 は、各種の補助的なデータを記憶する記憶装置（バックアップメモリ）であり、ゲーム装置の電源をオフした後も記憶した情報が保持されるようになっている。補助記憶装置 1 0 4 は、例えば、メモ리카ードやゲームカートリッジ内メモリなどである。

【0016】ゲームプログラムは、各種の記憶媒体（例えば、CD-ROM や ROM カートリッジなど）の形で提供される。ここでは、CD-ROM で提供されるとして説明する。プレイヤーがその CD-ROM を外部記憶装置 1 1 7 としてセットすると、CPU 1 1 1 は、その CD-ROM からゲームプログラム（ゲームに必要なデータを含む）を読み込み、必要に応じて RAM 1 1 2 にロードして実行する。これにより、ゲームが開始する。ゲームプログラムに基づいて CPU 1 1 1 が VRAM 1 1 4 に文字や図形や画像などのデータを書き込むと、画像制御部 1 1 5 が VRAM 1 1 4 の内容に応じて CRT 1 0 1 に表示を行なう。ゲームプログラムに基づいて CPU 1 1 1 が音声合成部 1 1 6 に音声（背景に流れる音楽その他の音も含むものとする）の出力を指示すると、音声合成部 1 1 6 はその指示に応じた所定の音声をスピーカ 1 0 2 から出力する。また、CPU 1 1 1 は、操作部 1 0 3 によるプレイヤーの操作を検出し、その操作情報に応じてゲーム進行を制御していく。

【0017】CPU 1 1 1 は、ゲーム終了時に所定のデータを補助記憶装置 1 0 4 に書き込み、ゲーム再開時には補助記憶装置 1 0 4 から必要なデータを読み出してゲームを再現し、その後、ゲームを再開する。その処理手順の具体例については、後述する。

【0018】図 2（a）は、図 1 のゲーム装置においてゲームを終了したときの状況を示す模式図である。図 2

（b）は、そのゲームを再開するときの状況を示す模式図である。図 2（a）および図 2（b）において、200 はゲームの流れを模式的に示した帯、201 はゲームスタートのポイント、202 はゲームクリアのポイントを示す。

【0019】図 2（a）において、プレイヤーはポイント 201 からゲームを開始し、ポイント 203 でゲーム終了になったとする。ゲーム終了ポイント 203 は、何らかの要因でゲームが中止・中断した位置である。ゲーム終了の要因としては、そのゲームに特有のゲーム制限による終了とプレイヤーの意思による終了とがある。ゲーム制限による終了とは、例えば、①ゲーム中でプレイヤーが操作しているプレイヤーキャラクタのライフ（体力）ポイントがなくなる、②プレイヤーキャラクタのヒットポイントが 0 になる、③制限時間切れ、④複数のプレイヤーキャラクタの全部がゲーム中で消費された、などによる終了である。プレイヤーの意思による終了とは、プレイヤーが意識的にゲームを中断（ゲームソフト自体を終了せずにゲームを一時的に中断する場合）したり中止（ゲームソフトの実行を終了する場合）して終了することである。

【0020】図 2（a）でポイント 201 からポイント 203 まで実行されたゲームのゲームデータは、RAM 1 1 2 上に設けられた所定のバッファに格納される。ゲームデータとは、例えば、①プレイヤーが操作部 1 0 3 により入力したキー入力データ、②キャラクターのポジション（ゲーム中のプレイヤーキャラクタやコンピュータキャラクタの位置を示す情報）、③移動シーケンス（キャラクタがどのような経路で移動したかを示す情報）、④イベントフラグ（どのイベントをクリアしたかを示す情報）などのゲームプレイにかかわるデータをいう。図 2（a）の例では、ポイント 201 からポイント 203 までの網掛け部分 204 のゲームデータがバッファに格納されることになる。

【0021】図 3（b）に、ゲームデータを格納するバッファを示す。322 がゲームデータを格納するバッファである。このバッファ 322 は、ゲームデータを格納する m 個のゲームデータ記憶領域からなる。バッファポジション 321 は、バッファ 322 のゲームデータ記憶領域の 1 つを指すポイントである。図 2（a）のゲームスタートポイント 201 でゲーム開始したときバッファポジション 321 の値 n はバッファ 322 の先頭位置を指すように初期化され、ゲーム中にゲームデータが発生すると、そのゲームデータがバッファポジション 321 で指されるバッファ 322 内の領域に格納され、バッファポジション 321 の値 n がインクリメントされる。これを繰り返して、図 2（a）の網掛け部分 204 のゲームデータを図 3（b）のバッファ 322 に順次格納していく。なお、バッファ 322 の記憶領域はゲーム開始からゲーム終了までのゲームデータをほぼすべて格納でき

る程度の大きさが確保されているものとする。また、バッファ 3 2 2 をリングバッファとし、バッファポジション 3 2 1 の値 n がバッファ 3 2 2 の最後の記憶領域にゲームデータを格納した後は、再びバッファポジション 3 2 1 の値 n がバッファ 3 2 2 の先頭位置を指すようにしても良い。

【0022】図 2 (a) の 2 1 1 ~ 2 1 5 は、あらかじめ決められているゲーム中の区切りポイントである。例えば、ゲームのシナリオ的な区切り、面 (ステージ) やエリアの区切り、あるいは所定のセーブポイントなどである。図 2 (a) のポイント 2 0 3 でゲーム終了したときには、網掛け部分 2 0 4 のゲームデータがバッファ 3 2 2 に格納されていることになるが、次にこのゲームを再開するときには、ゲーム終了ポイント 2 0 3 からさかのぼって一番近い区切りポイントからゲーム終了ポイント 2 0 3 までのゲームデータが自動的に再現される。図 2 (a) の例では、ゲーム終了ポイント 2 0 3 からさかのぼって一番近い区切りポイントは 2 1 2 である。そこで、ゲーム再開時には、図 2 (b) のように区切りポイント 2 1 2 から前回のゲーム終了ポイント 2 0 3 までのゲームデータ (図 2 (b) の斜線部分 2 0 6) をバッファ 3 2 2 から読み出して自動的に再現する。その後、プレイヤーのコントロールによるゲームプレイが始まる。

【0023】区切りポイント 2 1 1 ~ 2 1 5 は、その位置がゲーム中でどのような段階にあるかプレイヤーが把握しやすい位置に設定してある。例えば、プレイヤーキャラクタがレベルアップしたところ、あるステージをクリアしたところなどである。したがって、そのような区切りポイントから前回ゲーム終了ポイントまで自動的に再現することにより、プレイヤーは前回ゲーム終了したところまでのゲームの流れを容易に把握できる。

【0024】次に、図 2 で説明したような処理を行なう具体的な処理手順の例を説明する。始めにゲーム装置内部のメモリを用いる例を説明し、次に外部メモリ装置を用いる例を説明する。

【0025】図 3 (a) は、ゲーム装置本体 1 0 0 の内部の RAM 1 1 2 を用いて、図 2 で説明した処理を実現する処理例である。ゲームがスタートすると、まずステップ 3 0 1 でゲームの初期化を行なう。特にバッファポジション 3 2 1 の値 n は、バッファ 3 2 2 の先頭を指すように初期化する。次にステップ 3 0 2 で、ゲーム処理 (ゲームの本体部分の処理) を行なう。次にステップ 3 0 3 で、バッファポジション 3 2 1 の値 n が指すバッファ 3 2 2 上の記憶領域に、ゲームデータを格納する。なお、ステップ 3 0 2 のゲーム処理中でゲームデータが 1 つ発生するごとに、ステップ 3 0 2 から 3 0 3 に進むものとする。ステップ 3 0 3 の後、ステップ 3 0 4 でバッファポジション 3 2 1 の値 n をインクリメントし、ステップ 3 0 5 でゲーム終了か否かを判別する。ゲーム終了の要因の具体的な例は、図 2 で説明した。ゲーム終了の

きはステップ 3 0 6 に進み、ゲーム終了でないときはステップ 3 0 2 に戻る。上記のステップ 3 0 2 ~ 3 0 5 のループ処理を、ゲーム終了に至るまで繰り返し、ゲームが進行する。この間のゲームデータはすべてバッファ 3 2 2 に順次格納される。

【0026】ステップ 3 0 5 でゲーム終了のときは、ステップ 3 0 6 で、引き続きゲームを続けるか否かを判別する。これは、プレイヤーにゲームを終了して良いかどうかを確認する処理である。ゲームを続ける場合 (すなわち、ゲームを再開する場合) はステップ 3 0 8 に進み、続けない場合は、ステップ 3 0 7 でゲームオーバーの処理をした後終了する。

【0027】ステップ 3 0 8 では、バッファポジション 3 2 1 の値を、現在値 n から所定数 x だけ戻った位置に設定する。これは、図 2 で説明したように、前回ゲーム終了した位置から、その位置からさかのぼって一番近い区切り位置まで、バッファポジション 3 2 1 の値 n を戻す処理である。次にステップ 3 0 9 で、バッファポジション 3 2 1 の値 n が指すバッファ 3 2 2 のゲームデータを読み出し、該ゲームデータに基づき、加工してゲーム画面を構成し直し再現する。さらに、ステップ 3 1 0 でバッファポジション 3 2 1 の値 n をインクリメントし、ステップ 3 1 1 でバッファポジション 3 2 1 の値 n が前回ゲーム終了時点の値と同じになったか否か (すなわち、図 2 (a) (b) でいうと、ポイント 2 0 3 に至ったか否か) を判別する。同じになっていなかったときは、ステップ 3 0 9 に戻ってゲームの再現を続ける。ステップ 3 0 9 ~ 3 1 1 を繰り返すことにより、直前の区切り位置から前回ゲーム終了位置までのゲームの自動的な再現を行なうことができる。

【0028】なお、ステップ 3 0 9 における「加工」とは、例えば、①早送りをしてゲームを高速に再現する、②プレイヤーが前回までのゲームプレイを回想するのに必要のないデータを簡略化し、またはゲームプレイを回想するのに有効なデータを挿入する、③継続してゲームプレイをするとき、ゲームの雰囲気盛り上げるためのデータの挿入あるいは省略を行なう、などをいう。このような加工を行なうことにより、例えばロールプレイングゲームで、あるアイテムをあちこちの場所を探して始めて見つけた場合でも、そのアイテムを見つけたところのみを再現し、あちこち探したところは再現を省略する、というようなことができる。また、ゲーム中で A → B → C → D という経路を通ったことがゲームの流れの上で重要であるなら、その部分のみを再現し、その他の部分は省略して、プレイヤーが回想できる程度の必要最小限の流れのみ再現する、というようなこともできる。

【0029】ステップ 3 1 1 でバッファポジション 3 2 1 の値 n がゲーム終了時と同じ値になったときは、ゲームの再現が終わったということであるから、ステップ 3 0 2 に戻ってゲームを再開する。

【0030】図3の処理例によれば、何らかの要因によりゲーム終了に至ったとき、プレイヤーがゲームを続けるのであれば、図2で説明したように所定の区切り位置からゲーム終了位置までを自動的に再現した後、再びゲームを再開することができる。したがって、プレイヤーは、ゲーム終了直前の操作を繰り返すことなくそこまでのゲームの流れを容易に把握でき、その上でゲーム終了位置からゲームを再開することができる。

【0031】次に、外部メモリ装置を用いる処理手順例を説明する。上述の図3の処理手順では、RAM 112上のバッファ322に格納したゲームデータをそのまま用いている。そのため、ゲーム装置の電源をオフしてしまうと、バッファ322のゲームデータは消失し、次に電源をオンしてそのゲームを再開しようとしても図2で説明したような再現は行なわれない。これに対し、次に説明する図4の処理手順では、バッファ322のゲームデータを外部メモリ装置に格納し、ゲーム終了の後、ゲーム装置の電源をオフし、次にゲーム装置の電源をオンしてそのゲームを再開する場合でも、図2(b)で説明したような再現を行なうことができる。ここで、外部メモリ装置とは、ゲーム装置本体の電源のオンオフとは関係なくデータを記憶しておける記憶装置のことであり、図1の外部記憶装置117や補助記憶装置104に相当する。

【0032】図4において、ゲームがスタートすると、ステップ401で、外部メモリ装置に該当ゲームの記録データがあるか否かを判別する。記録データがある場合は、ステップ402で、外部メモリ装置からバッファ322にその記録データを読み込み、バッファポジション321の値nをその記録データの最後のゲームデータを指すように設定して、ステップ403に進む。ステップ401で記録データが無いときは、ステップ402をスキップして、ステップ403に進む。記録データとは、前回のゲームでバッファ322に格納したゲームデータであり、後述するステップ408で外部メモリ装置に書き込まれたデータである。

【0033】次にステップ403で、ゲームの初期化を行なう。このゲームの初期化処理中では、図3のステップ308～311で説明したのと同じ再現処理を行なうものとする。これにより、図2で説明したような所定の区切り位置から前回ゲーム終了した位置までの自動的な再現が行なわれる。再現が終わった時点では、バッファポジション321の値nは、バッファ322中の前回ゲーム終了した位置の次に位置づけられるものとする。すなわち、次にゲームデータを書き込むべき位置に設定されるということである。

【0034】次のステップ404～407の処理は、図3(a)のステップ302～305の処理と同じである。ステップ404～407の処理により、バッファ322にゲームデータを書き込みながら、ゲームが実行さ

れる。

【0035】ステップ407でゲーム終了となったときは、ステップ408で、外部メモリにバッファ322の内容を書き込む。次にステップ409で、引き続きゲームを続けるか否かを判別する。ゲームを続ける場合(すなわち、ゲームを再開する場合)はステップ411に進み、続けない場合は、ステップ410でゲームオーバーの処理をした後終了する。ステップ409、410は、図3のステップ306、307と同じである。

【0036】ゲームを続ける場合は、ステップ411～414の処理を行なう。ステップ411～414の処理は、図3(a)のステップ308～311と同じであり、これらの処理により、電源をオフしないでゲームを続ける場合の図2で説明した再現処理が実行される。

【0037】図4の処理例によれば、ゲーム終了後にゲーム装置本体の電源をオフした場合でも、再度ゲーム装置本体の電源をオンしてそのゲームを再開する際に、図2で説明したような前回ゲームの再現が行なわれる。

【0038】なお、図4において、外部メモリへの記録データの書き込みおよび読み込みはプレイヤーの意思によって任意に行なうことができるようにしても良い。また、図2～4で説明した方式では、バッファ322にゲームデータをすべて記憶していき、ゲーム再開時に、その記憶してあるゲームデータのうち再現する部分を取り出して再現するようにしているが、ゲームデータを記憶する際に、処理の区切り位置(図2の211～215)からのゲームデータを記憶するようにしてもよい。そのためには、ゲームデータの記憶の際、所定の区切り位置を超えたときに、それ以前のゲームデータを捨てるようにすればよい。

【0039】上記図2～4で説明した方式では、区切り位置211～215はあらかじめ決められた静的な位置であるが、この位置をプレイヤーが選択できるようにしてもよいし、長時間プレイヤーの操作がない場合にその位置を区切り位置とするなど、動的に区切り位置を設定するようにしてもよい。さらに、ゲーム終了した位置から所定分だけさかのぼった位置を区切り位置とすることも可能である。

【0040】

【発明の効果】以上説明したように、本発明によれば、ゲームを終了した後、再開する際に、ゲーム進行の流れの中の所定の区切り位置から前回ゲームが終了した位置までのゲーム画面を自動的に再現した後、前回ゲームが終了した位置からプレイヤーのコントロールによるゲームが再開するようにしているので、プレイヤーは前回ゲーム終了位置までのゲームの流れを容易に把握できる。ゲーム終了してから再開するまでに長い時間が開くと、プレイヤーはそれまでの状況を忘れてしまい、一時的にゲームプレイが不利になることがあるが、本発明によれば、それまでのゲームプレイを容易に思い出すことがで

き、再開後のゲームプレイでも無駄な行動をすることなくプレイ内容と関係のない不利益を被らずにゲームプレイを再開することができる。例えば、ロールプレイングゲームなどでは、ゲーム再開時に、忘れていたそれまでのシナリオの流れを容易に思い出すことができ、無駄な行動をせずに済む。さらに、自動的にゲーム画面が再現されるので、プレイヤーは前回と同じ操作を行わずに済む。また、所定の区切り位置から前回ゲーム終了位置までを再現するので、冗長に前回のすべての操作を自動的に再現することなく、プレイヤーがゲームの流れを把握するのに必要最小限な分だけ再現することができる。

【図面の簡単な説明】

【図 1】 本発明に係るゲーム装置のハードウェア構成例を示す図

【図 2】 ゲームを終了したときの状況、およびそのゲー

ムを再開するときの状況を示す模式図

【図 3】 ゲーム装置内部のメモリを用いた処理手順例を示すフローチャート、およびゲームデータを格納するバッファを示す図

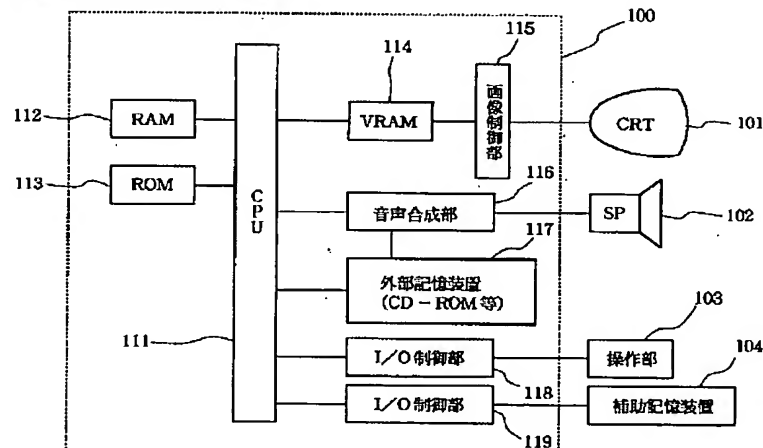
【図 4】 外部メモリ装置を用いた処理手順例を示すフローチャート図

【符号の説明】

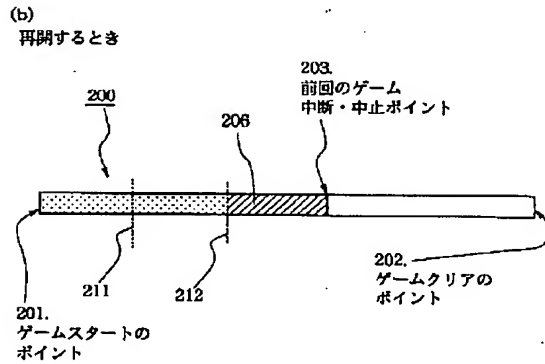
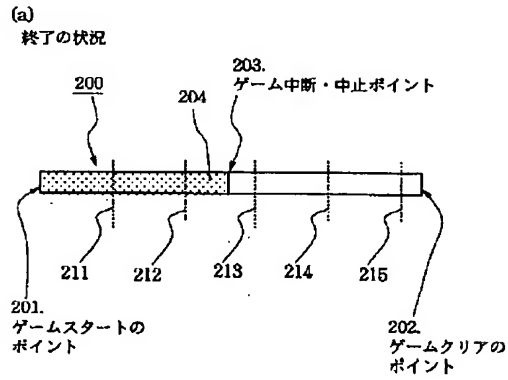
100…ゲーム装置本体、101…表示装置（CRT）、102…スピーカー（SP）、103…操作部、104…補助記憶装置、111…中央処理装置（CPU）、112…ランダムアクセスメモリ（RAM）、113…リードオンリメモリ（ROM）、114…ビデオ制御部、115…画像制御部、116…音声合成部、117…外部記憶装置、118、119…入出力（I/O）制御部。

【図 1】

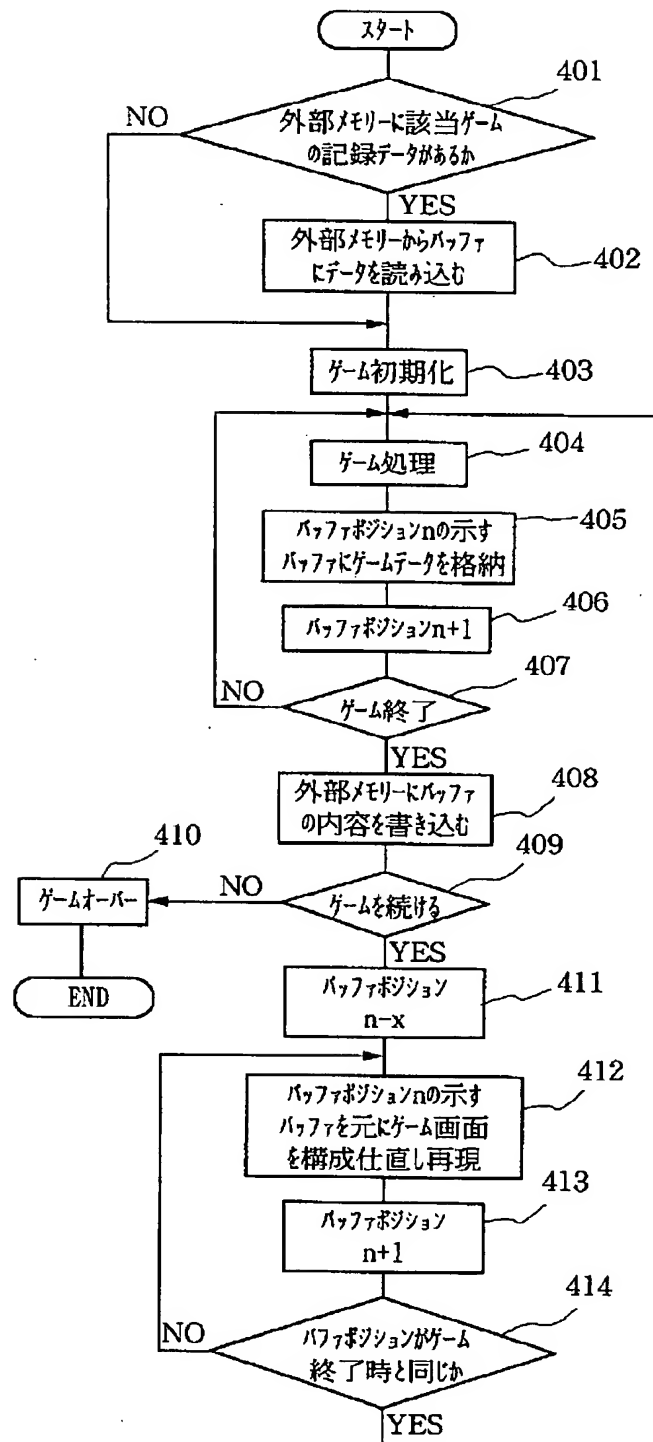
本発明に係るシステムのハードウェア構成例



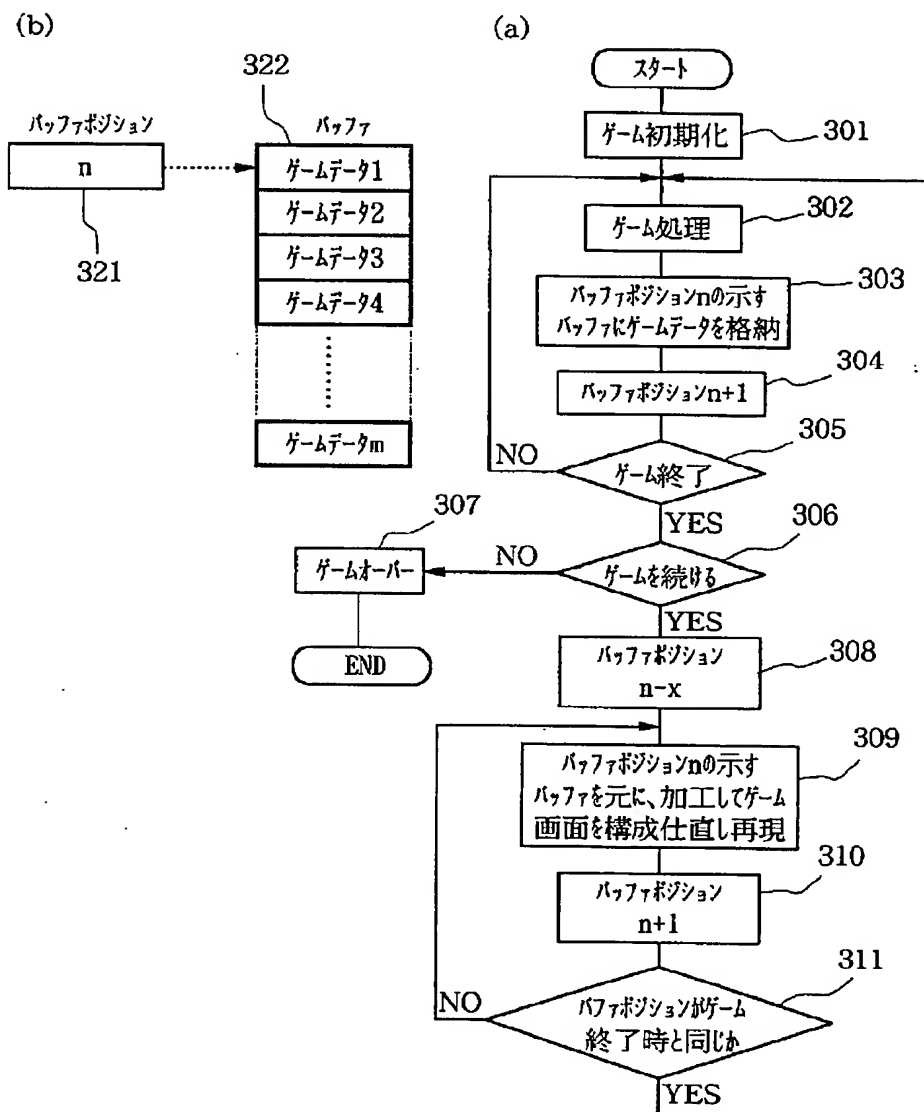
【図 2】



【図 4】



【図 3】



PATENT ABSTRACTS OF JAPAN

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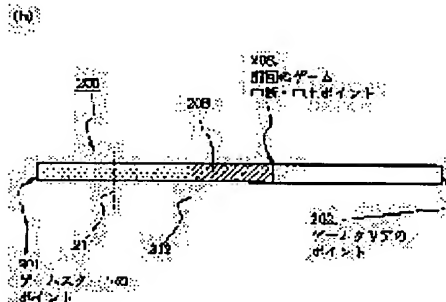
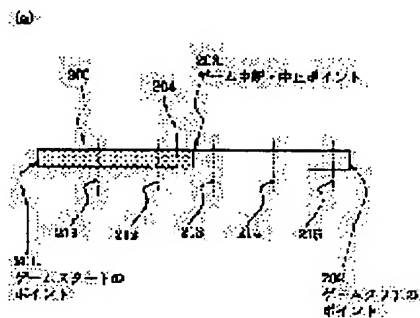
(72)Inventor : KATO MASANORI
ONODA HIROYUKI

(54) GAME DEVICE AND STORAGE MEDIUM STORED WITH PROGRAM CONCERNING THE GAME DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a game device by which a player can easily grasp the flow of a game until last time by reproducing only irreducibly minimum part without executing the same operation again and without automatically reproducing all the operation of last time redundantly at the time of restarting the game after finishing the game and to provide a storage medium in which the program concerning the device is stored.

SOLUTION: During the game, key input data inputted by a player and game data expressing the position of a character, etc., are stored (204). At the time of restarting the game after finishing the game, game data from a prescribed dividing position (212) in the flow of the progress of the game to a position (203) where the last game is finished is read to automatically reproduce (206) a game picture based on the game data, and after then the game is restarted by player's control from the position (203) where the game is finished last time.



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CLAIMS

[Claim(s)]

[Claim 1] The storage means which is game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected, and carries out the sequential storage of various kinds of game data generated during game activation, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. the game equipment characterized by having a means to resume the game by control of a player from a means to reproduce a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[Claim 2] It is game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected. That to which it is a storage means to memorize various kinds of game data generated during game activation, and the contents of storage do not disappear even after the power source of the body of game equipment is turned off, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. the game equipment characterized by having a means to resume the game by control of a player from a means to reproduce a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[Claim 3] It is the storage which memorized the game program performed with the game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected. The step which memorizes various kinds of game data which generate this game program during game activation for a predetermined storage means, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. with the step which reproduces a game screen automatically based on these game data that carried out reading appearance The storage which memorized the game program characterized by having the step which resumes the game by control of a player from the location which the game ended last time after said reappearance finishes.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the storage which memorized the program concerning game equipment and this game equipment.

[0002]

[Description of the Prior Art] Conventionally, various kinds of games which operate with home video game equipment or a personal computer are known. In these games, there are termination by game limit peculiar to the game and termination by the intention of a player as a factor of game termination. The termination by game limit is the case where the LIFE point of a player character which the player is operating for example, in a game was lost, or limit time-out is passed etc. The termination by the intention of a player is that a player interrupts and calls off a game intentionally.

[0003] In the Prior art, when resuming a game after carrying out game termination by such various kinds of factors, it was the fundamental method which is resumed from the location which carried out game termination. For example, it is condition of resuming from the field (stage) which made the mistake and became game over if it is an action game, and resuming from the place whose LIFE point of a player character was lost if it is a roll playing game. Moreover, there is also a thing which enabled it to resume a game from the location (break location beforehand decided in the game) which returned from the location which carried out game termination for a while. Furthermore, in a roll playing game, the player itself saves as data the location where the game advanced, these data are loaded at the time of a game restart, and there is also a thing which enabled it to resume a game from the location.

[0004] When the game play time limit is set up and the time amount passes, while terminating a game, all the key strokes from game initiation to game termination are memorized to predetermined storage, and the game equipment which reproduces the last game actuation automatically based on the keypad information memorized by this storage is indicated by JP,7-303760,A at the time of a game restart. Since according to this all the key strokes performed last time are reproduced and Replay of the game is automatically carried out when a player resumes a game, it is effective in becoming easy to grasp the flow of the last game.

[0005]

[Problem(s) to be Solved by the Invention] However, by the method resumed from the location which carried out game termination, there is a trouble that it is difficult for a player to grasp the flow of the game performed to last time. For example, even if it resumes from the location which carried out game termination by the roll playing game etc., a player may be unable to remember flow of the scenario to there.

[0006] Moreover, by the method which resumes a game from the location which returned from the location which carried out game termination for a while, a player has the trouble that the again same actuation as last time must be performed to the location which ended the game last time. For example, though the part with high difficulty is cleared by the action game, at the time of a game restart, it must resume from before for a while, and that case where a player must clear a part with the again high difficulty etc. exists. Moreover, in a roll playing game, the key stroke which repeats again the actuation of a player character performed last time may have to be performed. The method by which the player itself saves the location of a game, loads at the time of a game restart, and

resumes a game must also perform the same actuation again from the location saved too. Moreover, when the player has forgotten save, it returns to quite a front.

[0007] By the method given in above-mentioned JP,7-303760,A, since all last game actuation is reproduced at the time of a game restart, as for a player, the flow of the game to there can be grasped easily. However, by this method, since all the last key strokes are reproduced, reappearance may become redundancy. For example, in a roll playing game, since the item which needs a player character is acquired, actuation of searching for this item here and there may be performed, consequently the item may be able to be acquired in a predetermined location. Even in such a case, since the actuation of all is memorized and it reappears at the time of a game restart, even if the player knows the location with this item, it can show reappearance of all last actuation. Moreover, since all the key strokes are reproduced even when the key stroke performed last time occurs in large quantities, as for a player, the reappearance has been shown for a long time.

[0008] When resuming the game in view of the trouble in the above-mentioned conventional form after this invention carries out game termination Only a necessary minimum part is reproduced without [without a player performs the again same actuation, and] reproducing all last actuation automatically to redundancy. It aims at offering the storage which memorized the program concerning the game equipment and this game equipment with which the player enabled it to grasp the flow of the game to last time easily.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention concerning claim 1 The storage means which is game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected, and carries out the sequential storage of various kinds of game data generated during game activation, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. it is characterized by having a means to resume the game by control of a player from a means to reproduce a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[0010] Invention concerning claim 2 is game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected. That to which it is a storage means to memorize various kinds of game data generated during game activation, and the contents of storage do not disappear even after the power source of the body of game equipment is turned off, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. it is characterized by having a means to resume the game by control of a player from a means to reproduce a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[0011] Invention concerning claim 3 is the storage which memorized the game program performed with the game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected. The step which memorizes various kinds of game data which generate this game program during game activation for a predetermined storage means, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. it is characterized by having the step which resumes the game by control of a player from the step which reproduces a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[0012] Reappearance of the game screen at the time of the above-mentioned game restart is good to process it (for the column of the gestalt of implementation of invention to explain the example of processing), and to make it reappear based on the read game data.

[0013]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained using

a drawing.

[0014] Drawing 1 shows the example of a hardware configuration of the game equipment concerning this invention. This game equipment is equipped with the body 100 of game equipment, the display (CRT) 101, the loudspeaker (SP) 102, the control unit 103, and the auxiliary storage unit 104. The body 100 of game equipment is equipped with a central processing unit (CPU) 111, random access memory (RAM) 112, a read-only memory (ROM) 113, Video RAM (VRAM) 114, the image control section 115, the speech synthesis section 116, external storage 117, and the I/O (I/O) control section 118,119. In addition, the gestalt of this operation explains the body 100 of game equipment below as what is usual home video game equipment. However, when performing game software not only with home video game equipment but with a personal computer, this invention can be applied to various kinds of games (for example, sport games, such as soccer and baseball, an action game, a shooting game, etc.) which can resume the game, after it carries out game termination.

[0015] In the body 100 of game equipment, CPU111 is arithmetic and program control which controls actuation of this whole game equipment. RAM112 is memory in which read-out which CPU111 uses for a work-piece field etc. and writing are possible. ROM113 is a read-only memory which stores various kinds of control programs (BIOS:Basic Input/OutputSystem) which CPU111 performs. VRAM114 is a Video RAM field for writing in the data of the alphabetic character, graphic form, and image which are displayed on CRT101 from CPU111. The image control section 115 performs control as which CPU111 displays an alphabetic character, a graphic form, and an image on CRT101 based on various kinds of data written in VRAM114. The speech synthesis section 116 is SPU (sound processing unit) which reads voice data from external storage 117, or compounds voice data based on directions of CPU111, and is outputted to a loudspeaker 102. External storage 117 is equipment which sets a removable storage and reads various kinds of data from this storage, for example, is CD-ROM equipment etc. The I/O-hardware-control section 118 is an interface between CPU111 and a control unit 103, and the I/O-hardware-control section 119 is an interface between CPU111 and an auxiliary storage unit 104. A control unit 103 is an input unit (controller) for a player to operate it. An auxiliary storage unit 104 is a store (backup memory) which memorizes various kinds of auxiliary data, and the information memorized even after turning off the power source of game equipment is held. Auxiliary storage units 104 are a memory card, the memory in a game cartridge, etc.

[0016] A game program is offered in the form of various kinds of storages (for example, CD-ROM, a ROM cartridge, etc.). Here, it explains being provided by CD-ROM. If a player sets the CD-ROM as external storage 117, CPU111 reads a game program (data required for a game are included) from the CD-ROM, and if needed, it will be loaded to RAM112 and it will perform it. Thereby, a game begins. If CPU111 writes data, such as an alphabetic character, a graphic form, and an image, in VRAM114 based on a game program, the image control section 115 will display on CRT101 according to the contents of VRAM114. If CPU111 directs an audio (the sound of the music which flows for a background, and others shall also be included) output in the speech synthesis section 116 based on a game program, the speech synthesis section 116 will output the predetermined voice according to the directions from a loudspeaker 102. Moreover, CPU111 detects actuation of the player by the control unit 103, and controls game advance according to the actuation information.

[0017] At the time of game termination, CPU111 writes predetermined data in an auxiliary storage unit 104, reads required data from an auxiliary storage unit 104 at the time of a game restart, reproduces a game, and resumes a game after that. About the example of the procedure, it mentions later.

[0018] Drawing 2 (a) is the mimetic diagram showing the situation when ending a game in the game equipment of drawing 1. Drawing 2 (b) is the mimetic diagram showing the situation when resuming the game. In drawing 2 (a) and drawing 2 (b), the band which 200 showed the flow of a game typically, and 201 show the point of a game start, and 202 shows the point of a game clearance.

[0019] In drawing 2 (a), a player starts a game from the point 201 and presupposes that it became game termination on the point 203. The game termination point 203 is the location which the game stopped and interrupted for a certain factor. As a factor of game termination, there are termination by game limit peculiar to the game and termination by the intention of a player. ** limit time-out from which the hit point of ** player character whose LIFE (physical strength) point of a player character which the player is operating for example, in ** game is lost serves as termination by game limit to 0,

and ** — all of the player characters in which more than one are terminated by having been consumed in the game etc. The termination by the intention of a player is a player's interrupting a game intentionally or stopping, and ending (when ending activation of game software) (when interrupting a game temporarily, without ending the game software itself).

[0020] The game data of a game with which even the point 203 was performed from the point 201 by drawing 2 (a) are stored in the predetermined buffer formed on RAM112. Game data mean the data in connection with game plays, such as a position (information which shows the location of the player character in a game, or a computer character) of the key input data which for example, ** player inputted by the control unit 103, and ** character, ** migration sequence (information which shows in what kind of path the character moved), and ** event flag (information which shows which event was cleared). In the example of drawing 2 (a), the game data of the half-tone-dot-meshing part 204 from the point 201 to the point 203 will be stored in a buffer.

[0021] The buffer which stores game data in drawing 3 (b) is shown. 322 is the buffer which stores game data. This buffer 322 consists of m game data storage areas which store game data. The buffer position 321 is a pointer which points out one of the game data storage areas of a buffer 322. When game initiation is carried out in the game starting point 201 of drawing 2 (a), if the value n of the buffer position 321 is initialized so that the head location of a buffer 322 may be pointed out, and game data are generated in a game, it will be stored in the field in the buffer 322 with which it is pointed out to the game data by the buffer position 321, and the increment of the value n of the buffer position 321 will be carried out. This is repeated and sequential storing of the game data of the half-tone-dot-meshing part 204 of drawing 2 (a) is carried out at the buffer 322 of drawing 3 (b). In addition, the magnitude of extent in which the storage region of a buffer 322 can store mostly the game data from game initiation to game termination altogether shall be secured. Moreover, after it uses a buffer 322 as a ring buffer and the value n of the buffer position 321 stores game data in the storage region of the last of a buffer 322, you may make it the value n of the buffer position 321 point out the head location of a buffer 322 again.

[0022] 211-215 of drawing 2 (a) are the break point in the game decided beforehand. For example, they are the scenario-break of a game, the break of a field (stage) or area, or the predetermined number of games saved in relief. When game termination is carried out on the point 203 of drawing 2 (a), the game data of the half-tone-dot-meshing part 204 will be stored in the buffer 322, but when resuming this game next, it goes back from the game termination point 203, and the game data from the nearest break point to the game termination point 203 are reproduced automatically. In the example of drawing 2 (a), it goes back from the game termination point 203, and the nearest break point is 212. So, at the time of a game restart, the game data (shadow area 206 of drawing 2 (b)) to the last game termination point 203 from the break point 212 are read from a buffer 322 like drawing 2 (b), and it reappears automatically at it. Then, the game play by control of a player starts.

[0023] The break points 211-215 are set as the location where a player tends to grasp in what kind of phase the location is located in a game. For example, when the player character improved, it just etc. cleared a certain stage. Therefore, when even the game termination point reappears automatically last time from such the break point, a player can grasp easily the flow of the game by the place which carried out game termination last time.

[0024] Next, the example of the concrete procedure which performs processing which was explained by drawing 2 is explained. The example using the memory inside introduction game equipment is explained, and the example which uses external memory equipment next is explained.

[0025] Drawing 3 (a) is an example of processing which realizes processing explained by drawing 2 using RAM112 inside the body 100 of game equipment. A start of a game initializes a game at step 301 first. Especially the value n of the buffer position 321 is initialized so that the head of a buffer 322 may be pointed out. Next, at step 302, game processing (processing of the body part of a game) is performed. Next, game data are stored in the storage region on the buffer 322 which the value n of the buffer position 321 points out at step 303. In addition, whenever it is [game / of step 302] under processing and one game data is generated, it shall progress to steps 302-303. The value n of the buffer position 321 is incremented at step 304 after step 303, and it distinguishes whether it is game termination at step 305. Drawing 2 explained the concrete example of the factor of game termination. At the time of game termination, it progresses to step 306, and when it is not game termination, it

returns to step 302. A game advances loop-formation processing of the above-mentioned steps 302-305 repeatedly until it results in game termination. Sequential storing of all the game data in the meantime is carried out at a buffer 322.

[0026] At the time of game termination at step 305, it is step 306, and it distinguishes whether a game is continued succeeding. This is processing which checks whether a game may be ended to a player. When progressing to step 308 when continuing a game (namely, when resuming a game), and not continuing, it ends, after processing game over at step 307.

[0027] At step 308, the value of the buffer position 321 is set as the location to which only the predetermined number x returned from the current value n. This is processing which goes back from the location and returns the value n of the buffer position 321 to the nearest break location from the location which carried out game termination last time, as drawing 2 explained. Next, at step 309, the game data of the buffer 322 which the value n of the buffer position 321 points out are read, and it is processed based on these game data, and a game screen is reconstituted and it reappears.

Furthermore, it distinguishes whether the value n of the buffer position 321 was incremented at step 310, and the value n of the buffer position 321 became last time the same as the value at the game termination time at step 311 (that is, when said by drawing 2 (a) and (b), did it result in the point 203 or not?). When it is not the same, it returns to step 309 and reappearance of a game is continued. By repeating steps 309-311, automatic reappearance of the game to a game termination location can be performed last time from the last break location.

[0028] In addition, when doing [which inserts data effective in simplifying the data which do not have the need in ** player which carries out for example, ** rapid traverse, and reproduces a game at a high speed recollecting the game play to last time "processing" in step 309, or recollecting a game play] ** continuation of and carrying out a game play, it says performing insertion or an abbreviation of the data for enlivening the ambient atmosphere of a game etc. It seems that it can be said that only the place which found the item is reproduced and the place looked for here and there omits reappearance even when a certain item is begun and found in search of a location here and there by the roll playing game by performing such processing. Moreover, if it is important on the flow of a game to have passed along the path of A→B→C→D in the game, it can also perform that reproduce only the part, and omit other parts and they reproduce only the necessary minimum flow which is extent which can recollect a player.

[0029] Since I hear that reappearance of a game finished and it is when the value n of the buffer position 321 turns into the same value as the time of game termination at step 311, it returns to step 302 and a game is resumed.

[0030] After reproducing automatically from a predetermined break location to a game termination location as drawing 2 explained if a player continues a game when it results in game termination according to a certain factor according to the example of processing of drawing 3, a game can be resumed again. Therefore, a player can grasp the flow of the game to there easily, without repeating the actuation in front of game termination, and can resume a game from a game termination location on it.

[0031] Next, the example of procedure using external memory equipment is explained. In the procedure of above-mentioned drawing 3, the game data stored in the buffer 322 on RAM112 are used as it is. Therefore, if the power source of game equipment is turned off, the game data of a buffer 322 disappear, and even if it is next going to turn on a power source and is going to resume the game, reappearance which was explained by drawing 2 will not be performed. On the other hand, in the procedure of drawing 4 explained below, the game data of a buffer 322 are stored in external memory equipment, the power source of game equipment is turned off after game termination, and even when the power source of game equipment is turned on next and it resumes the game, reappearance which was explained by drawing 2 (b) can be performed. Here, external memory equipment is the storage which can memorize and set data regardless of turning on and off of the power source of the body of game equipment, and it is equivalent to the external storage 117 and the auxiliary storage unit 104 of drawing 1.

[0032] In drawing 4, a start of a game distinguishes whether the record data of an applicable game are in external memory equipment at step 401. When there are record data, it is step 402, and the record data is read into a buffer 322 from external memory equipment, the value n of the buffer

position 321 is set up so that the game data of the last of the record data may be pointed out, and it progresses to step 403. At step 401, when there are no record data, step 402 is skipped, and it progresses to step 403. Record data are game data stored in the buffer 322 in the last game, and are data written in external memory equipment at step 408 mentioned later.

[0033] Next, a game is initialized at step 403. The same reappearance processing shall be performed in initialization processing of this game as steps 308-311 of drawing 3 explained. Automatic reappearance to a location which carried out game termination last time by this from a predetermined break location which was explained by drawing 2 is performed. After reappearance finishes, the value n of the buffer position 321 shall be positioned in the degree of the location which carried out last game termination in the buffer 322. That is, I hear that it is set as the location which should write in game data next, and it is.

[0034] Processing of the following steps 404-407 is the same as processing of steps 302-305 of drawing 3 (a). A game is performed by processing of steps 404-407, writing game data in a buffer 322.

[0035] When it becomes game termination at step 407, it is step 408 and the contents of the buffer 322 are written in external memory. Next, at step 409, it distinguishes whether a game is continued succeeding. When progressing to step 411 when continuing a game (namely, when resuming a game), and not continuing, it ends, after processing game over at step 410. Step 409,410 is the same as step 306,307 of drawing 3.

[0036] When continuing a game, steps 411-414 are processed. Processing of steps 411-414 is the same as steps 308-311 of drawing 3 (a), and reappearance processing explained by drawing 2 in the case of continuing a game by these processings without turning off a power source is performed.

[0037] Even when the power source of the body of game equipment is turned off after game termination, in case according to the example of processing of drawing 4 the power source of the body of game equipment is turned on again and the game is resumed, reappearance of a game is performed last time which was explained by drawing 2.

[0038] In addition, you may enable it for the intention of a player to perform the writing and reading of record data to external memory to arbitration in drawing 4. Moreover, in case game data are memorized, you may make it memorize the game data from the break location (211-215 of drawing 2) of processing, although all game data are memorized to the buffer 322, the part reproduced among the memorized game data at the time of a game restart is taken out and he is trying to reappear by the method explained by drawing 2 -4. For that purpose, what is necessary is just to throw away the game data before it, when a predetermined break location is exceeded at the time of a game data storage.

[0039] A player may enable it to choose this location, and when there is no actuation of a player for a long time, you may make it set up a break location dynamically by the method explained by the above-mentioned drawing 2 -4, such as making that location into a break location, although the break locations 211-215 are static locations decided beforehand. Furthermore, it is also possible to make into a break location the location which went back by predetermined from the location which carried out game termination.

[0040]

[Effect of the Invention] Since he is trying for the game by control of the location which the game ended last time [after reproducing automatically the game screen to the location which the game ended last time from a break location predetermined / in the flow of game advance in case it resumes after ending a game according to / as explained above / this invention] to a player to resume, a player can grasp the flow of the game to a game termination location easily last time. According to this invention, although a player may forget the situation till then and a game play may become disadvantageous temporarily when long time amount opens, after carrying out game termination before resuming, the game play till then can be remembered easily, and a game play can be resumed, without wearing the disadvantageous profit which is unrelated to the contents of a play, without carrying out action also with the useless game play after a restart. For example, the flow of the forgotten scenario till then can be remembered easily, and it is not necessary to carry out useless action in a roll playing game, at the time of a game restart. Furthermore, since a game screen is reproduced automatically, a player does not need to perform the same actuation as last time.

Moreover, without reproducing all last actuation automatically to redundancy, since even a game termination location is reproduced last time from a predetermined break location, a player can reproduce only a necessary minimum part, although the flow of a game is grasped.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the storage which memorized the program concerning game equipment and this game equipment.

[0002]

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PRIOR ART

[Description of the Prior Art] Conventionally, various kinds of games which operate with home video game equipment or a personal computer are known. In these games, there are termination by game limit peculiar to the game and termination by the intention of a player as a factor of game termination. The termination by game limit is the case where the LIFE point of a player character which the player is operating for example, in a game was lost, or limit time-out is passed etc. The termination by the intention of a player is that a player interrupts and calls off a game intentionally. [0003] In the Prior art, when resuming a game after carrying out game termination by such various kinds of factors, it was the fundamental method which is resumed from the location which carried out game termination. For example, it is condition of resuming from the field (stage) which made the mistake and became game over if it is an action game, and resuming from the place whose LIFE point of a player character was lost if it is a roll playing game. Moreover, there is also a thing which enabled it to resume a game from the location (break location beforehand decided in the game) which returned from the location which carried out game termination for a while. Furthermore, in a roll playing game, the player itself saves as data the location where the game advanced, these data are loaded at the time of a game restart, and there is also a thing which enabled it to resume a game from the location.

[0004] When the game play time limit is set up and the time amount passes, while terminating a game, all the key strokes from game initiation to game termination are memorized to predetermined storage, and the game equipment which reproduces the last game actuation automatically based on the keypad information memorized by this storage is indicated by JP,7-303760,A at the time of a game restart. Since according to this all the key strokes performed last time are reproduced and Replay of the game is automatically carried out when a player resumes a game, it is effective in becoming easy to grasp the flow of the last game.

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EFFECT OF THE INVENTION

[Effect of the Invention] Since he is trying for the game by control of the location which the game ended last time [after reproducing automatically the game screen to the location which the game ended last time from a break location predetermined / in the flow of game advance in case it resumes after ending a game according to / as explained above / this invention] to a player to resume, a player can grasp the flow of the game to a game termination location easily last time. According to this invention, although a player may forget the situation till then and a game play may become disadvantageous temporarily when long time amount opens, after carrying out game termination before resuming, the game play till then can be remembered easily, and a game play can be resumed, without wearing the disadvantageous profit which is unrelated to the contents of a play, without carrying out action also with the useless game play after a restart. For example, the flow of the forgotten scenario till then can be remembered easily, and it is not necessary to carry out useless action in a roll playing game, at the time of a game restart. Furthermore, since a game screen is reproduced automatically, a player does not need to perform the same actuation as last time. Moreover, without reproducing all last actuation automatically to redundancy, since even a game termination location is reproduced last time from a predetermined break location, a player can reproduce only a necessary minimum part, although the flow of a game is grasped.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, by the method resumed from the location which carried out game termination, there is a trouble that it is difficult for a player to grasp the flow of the game performed to last time. For example, even if it resumes from the location which carried out game termination by the roll playing game etc., a player may be unable to remember flow of the scenario to there.

[0006] Moreover, by the method which resumes a game from the location which returned from the location which carried out game termination for a while, a player has the trouble that the again same actuation as last time must be performed to the location which ended the game last time. For example, though the part with high difficulty is cleared by the action game, at the time of a game restart, it must resume from before for a while, and that case where a player must clear a part with the again high difficulty etc. exists. Moreover, in a roll playing game, the key stroke which repeats again the actuation of a player character performed last time may have to be performed. The method by which the player itself saves the location of a game, loads at the time of a game restart, and resumes a game must also perform the same actuation again from the location saved too. Moreover, when the player has forgotten save, it returns to quite a front.

[0007] By the method given in above-mentioned JP,7-303760,A, since all last game actuation is reproduced at the time of a game restart, as for a player, the flow of the game to there can be grasped easily. However, by this method, since all the last key strokes are reproduced, reappearance may become redundancy. For example, in a roll playing game, since the item which needs a player character is acquired, actuation of searching for this item here and there may be performed, consequently the item may be able to be acquired in a predetermined location. Even in such a case, since the actuation of all is memorized and it reappears at the time of a game restart, even if the player knows the location with this item, it can show reappearance of all last actuation. Moreover, since all the key strokes are reproduced even when the key stroke performed last time occurs in large quantities, as for a player, the reappearance has been shown for a long time.

[0008] When resuming the game in view of the trouble in the above-mentioned conventional form after this invention carries out game termination Only a necessary minimum part is reproduced without [without a player performs the again same actuation, and] reproducing all last actuation automatically to redundancy. It aims at offering the storage which memorized the program concerning the game equipment and this game equipment with which the player enabled it to grasp the flow of the game to last time easily.

[Translation done.]

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention concerning claim 1 The storage means which is game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected, and carries out the sequential storage of various kinds of game data generated during game activation, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. it is characterized by having a means to resume the game by control of a player from a means to reproduce a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[0010] Invention concerning claim 2 is game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected. That to which it is a storage means to memorize various kinds of game data generated during game activation, and the contents of storage do not disappear even after the power source of the body of game equipment is turned off, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. it is characterized by having a means to resume the game by control of a player from a means to reproduce a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[0011] Invention concerning claim 3 is the storage which memorized the game program performed with the game equipment to which the actuation means for a player to operate it and the display means for displaying a game screen were connected. The step which memorizes various kinds of game data which generate this game program during game activation for a predetermined storage means, In case this game is resumed after a game is completed, the game data to the location which the game ended last time from the predetermined break location in the flow of game advance are read from said storage means. it is characterized by having the step which resumes the game by control of a player from the step which reproduces a game screen automatically based on these game data that carried out reading appearance, and the location which the game ended last time after said reappearance finished.

[0012] Reappearance of the game screen at the time of the above-mentioned game restart is good to process it (for the column of the gestalt of implementation of invention to explain the example of processing), and to make it reappear based on the read game data.

[0013]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained using a drawing.

[0014] Drawing 1 shows the example of a hardware configuration of the game equipment concerning this invention. This game equipment is equipped with the body 100 of game equipment, the display (CRT) 101, the loudspeaker (SP) 102, the control unit 103, and the auxiliary storage unit 104. The body 100 of game equipment is equipped with a central processing unit (CPU) 111, random access memory (RAM) 112, a read-only memory (ROM) 113, Video RAM (VRAM) 114, the image control section 115, the speech synthesis section 116, external storage 117, and the I/O (I/O) control

section 118,119. In addition, the gestalt of this operation explains the body 100 of game equipment below as what is usual home video game equipment. However, when performing game software not only with home video game equipment but with a personal computer, this invention can be applied to various kinds of games (for example, sport games, such as soccer and baseball, an action game, a shooting game, etc.) which can resume the game, after it carries out game termination.

[0015] In the body 100 of game equipment, CPU111 is arithmetic and program control which controls actuation of this whole game equipment. RAM112 is memory in which read-out which CPU111 uses for a work-piece field etc. and writing are possible. ROM113 is a read-only memory which stores various kinds of control programs (BIOS:Basic Input/OutputSystem) which CPU111 performs. VRAM114 is a Video RAM field for writing in the data of the alphabetic character, graphic form, and image which are displayed on CRT101 from CPU111. The image control section 115 performs control as which CPU111 displays an alphabetic character, a graphic form, and an image on CRT101 based on various kinds of data written in VRAM114. The speech synthesis section 116 is SPU (sound processing unit) which reads voice data from external storage 117, or compounds voice data based on directions of CPU111, and is outputted to a loudspeaker 102. External storage 117 is equipment which sets a removable storage and reads various kinds of data from this storage, for example, is CD-ROM equipment etc. The I/O-hardware-control section 118 is an interface between CPU111 and a control unit 103, and the I/O-hardware-control section 119 is an interface between CPU111 and an auxiliary storage unit 104. A control unit 103 is an input unit (controller) for a player to operate it. An auxiliary storage unit 104 is a store (backup memory) which memorizes various kinds of auxiliary data, and the information memorized even after turning off the power source of game equipment is held. Auxiliary storage units 104 are a memory card, the memory in a game cartridge, etc.

[0016] A game program is offered in the form of various kinds of storages (for example, CD-ROM, a ROM cartridge, etc.). Here, it explains being provided by CD-ROM. If a player sets the CD-ROM as external storage 117, CPU111 reads a game program (data required for a game are included) from the CD-ROM, and if needed, it will be loaded to RAM112 and it will perform it. Thereby, a game begins. If CPU111 writes data, such as an alphabetic character, a graphic form, and an image, in VRAM114 based on a game program, the image control section 115 will display on CRT101 according to the contents of VRAM114. If CPU111 directs an audio (the sound of the music which flows for a background, and others shall also be included) output in the speech synthesis section 116 based on a game program, the speech synthesis section 116 will output the predetermined voice according to the directions from a loudspeaker 102. Moreover, CPU111 detects actuation of the player by the control unit 103, and controls game advance according to the actuation information.

[0017] At the time of game termination, CPU111 writes predetermined data in an auxiliary storage unit 104, reads required data from an auxiliary storage unit 104 at the time of a game restart, reproduces a game, and resumes a game after that. About the example of the procedure, it mentions later.

[0018] Drawing 2 (a) is the mimetic diagram showing the situation when ending a game in the game equipment of drawing 1. Drawing 2 (b) is the mimetic diagram showing the situation when resuming the game. In drawing 2 (a) and drawing 2 (b), the band which 200 showed the flow of a game typically, and 201 show the point of a game start, and 202 shows the point of a game clearance.

[0019] In drawing 2 (a), a player starts a game from the point 201 and presupposes that it became game termination on the point 203. The game termination point 203 is the location which the game stopped and interrupted for a certain factor. As a factor of game termination, there are termination by game limit peculiar to the game and termination by the intention of a player. ** limit time-out from which the hit point of ** player character whose LIFE (physical strength) point of a player character which the player is operating for example, in ** game is lost serves as termination by game limit to 0, and ** -- all of the player characters in which more than one are are termination by having been consumed in the game etc. The termination by the intention of a player is a player's interrupting a game intentionally or stopping, and ending (when ending activation of game software) (when interrupting a game temporarily, without ending the game software itself).

[0020] The game data of a game with which even the point 203 was performed from the point 201 by drawing 2 (a) are stored in the predetermined buffer formed on RAM112. Game data mean the data in connection with game plays, such as a position (information which shows the location of the player

character in a game, or a computer character) of the key input data which for example, ** player inputted by the control unit 103, and ** character, ** migration sequence (information which shows in what kind of path the character moved), and ** event flag (information which shows which event was cleared). In the example of drawing 2 (a), the game data of the half-tone-dot-meshing part 204 from the point 201 to the point 203 will be stored in a buffer.

[0021] The buffer which stores game data in drawing 3 (b) is shown. 322 is the buffer which stores game data. This buffer 322 consists of m game data storage areas which store game data. The buffer position 321 is a pointer which points out one of the game data storage areas of a buffer 322. When game initiation is carried out in the game starting point 201 of drawing 2 (a), if the value n of the buffer position 321 is initialized so that the head location of a buffer 322 may be pointed out, and game data are generated in a game, it will be stored in the field in the buffer 322 with which it is pointed out to the game data by the buffer position 321, and the increment of the value n of the buffer position 321 will be carried out. This is repeated and sequential storing of the game data of the half-tone-dot-meshing part 204 of drawing 2 (a) is carried out at the buffer 322 of drawing 3 (b). In addition, the magnitude of extent in which the storage region of a buffer 322 can store mostly the game data from game initiation to game termination altogether shall be secured. Moreover, after it uses a buffer 322 as a ring buffer and the value n of the buffer position 321 stores game data in the storage region of the last of a buffer 322, you may make it the value n of the buffer position 321 point out the head location of a buffer 322 again.

[0022] 211-215 of drawing 2 (a) are the break point in the game decided beforehand. For example, they are the scenario-break of a game, the break of a field (stage) or area, or the predetermined number of games saved in relief. When game termination is carried out on the point 203 of drawing 2 (a), the game data of the half-tone-dot-meshing part 204 will be stored in the buffer 322, but when resuming this game next, it goes back from the game termination point 203, and the game data from the nearest break point to the game termination point 203 are reproduced automatically. In the example of drawing 2 (a), it goes back from the game termination point 203, and the nearest break point is 212. So, at the time of a game restart, the game data (shadow area 206 of drawing 2 (b)) to the last game termination point 203 from the break point 212 are read from a buffer 322 like drawing 2 (b), and it reappears automatically at it. Then, the game play by control of a player starts.

[0023] The break points 211-215 are set as the location where a player tends to grasp in what kind of phase the location is located in a game. For example, when the player character improved, it just etc. cleared a certain stage. Therefore, when even the game termination point reappears automatically last time from such the break point, a player can grasp easily the flow of the game by the place which carried out game termination last time.

[0024] Next, the example of the concrete procedure which performs processing which was explained by drawing 2 is explained. The example using the memory inside introduction game equipment is explained, and the example which uses external memory equipment next is explained.

[0025] Drawing 3 (a) is an example of processing which realizes processing explained by drawing 2 using RAM112 inside the body 100 of game equipment. A start of a game initializes a game at step 301 first. Especially the value n of the buffer position 321 is initialized so that the head of a buffer 322 may be pointed out. Next, at step 302, game processing (processing of the body part of a game) is performed. Next, game data are stored in the storage region on the buffer 322 which the value n of the buffer position 321 points out at step 303. In addition, whenever it is [game / of step 302] under processing and one game data is generated, it shall progress to steps 302-303. The value n of the buffer position 321 is incremented at step 304 after step 303, and it distinguishes whether it is game termination at step 305. Drawing 2 explained the concrete example of the factor of game termination. At the time of game termination, it progresses to step 306, and when it is not game termination, it returns to step 302. A game advances loop-formation processing of the above-mentioned steps 302-305 repeatedly until it results in game termination. Sequential storing of all the game data in the meantime is carried out at a buffer 322.

[0026] At the time of game termination at step 305, it is step 306, and it distinguishes whether a game is continued succeedingly. This is processing which checks whether a game may be ended to a player. When progressing to step 308 when continuing a game (namely, when resuming a game), and not continuing, it ends, after processing game over at step 307.

[0027] At step 308, the value of the buffer position 321 is set as the location to which only the predetermined number x returned from the current value n. This is processing which goes back from the location and returns the value n of the buffer position 321 to the nearest break location from the location which carried out game termination last time, as drawing 2 explained. Next, at step 309, the game data of the buffer 322 which the value n of the buffer position 321 points out are read, and it is processed based on these game data, and a game screen is reconstituted and it reappears.

Furthermore, it distinguishes whether the value n of the buffer position 321 was incremented at step 310, and the value n of the buffer position 321 became last time the same as the value at the game termination time at step 311 (that is, when said by drawing 2 (a) and (b), did it result in the point 203 or not?). When it is not the same, it returns to step 309 and reappearance of a game is continued. By repeating steps 309-311, automatic reappearance of the game to a game termination location can be performed last time from the last break location.

[0028] In addition, when doing [which inserts data effective in simplifying the data which do not have the need in ** player which carries out for example, ** rapid traverse, and reproduces a game at a high speed recollecting the game play to last time "processing" in step 309, or recollecting a game play] ** continuation of and carrying out a game play, it says performing insertion or an abbreviation of the data for enlivening the ambient atmosphere of a game etc. It seems that it can be said that only the place which found the item is reproduced and the place looked for here and there omits reappearance even when a certain item is begun and found in search of a location here and there by the roll playing game by performing such processing. Moreover, if it is important on the flow of a game to have passed along the path of A→B→C→D in the game, it can also perform that reproduce only the part, and omit other parts and they reproduce only the necessary minimum flow which is extent which can recollect a player.

[0029] Since I hear that reappearance of a game finished and it is when the value n of the buffer position 321 turns into the same value as the time of game termination at step 311, it returns to step 302 and a game is resumed.

[0030] After reproducing automatically from a predetermined break location to a game termination location as drawing 2 explained if a player continues a game when it results in game termination according to a certain factor according to the example of processing of drawing 3 , a game can be resumed again. Therefore, a player can grasp the flow of the game to there easily, without repeating the actuation in front of game termination, and can resume a game from a game termination location on it.

[0031] Next, the example of procedure using external memory equipment is explained. In the procedure of above-mentioned drawing 3 , the game data stored in the buffer 322 on RAM112 are used as it is. Therefore, if the power source of game equipment is turned off, the game data of a buffer 322 disappear, and even if it is next going to turn on a power source and is going to resume the game, reappearance which was explained by drawing 2 will not be performed. On the other hand, in the procedure of drawing 4 explained below, the game data of a buffer 322 are stored in external memory equipment, the power source of game equipment is turned off after game termination, and even when the power source of game equipment is turned on next and it resumes the game, reappearance which was explained by drawing 2 (b) can be performed. Here, external memory equipment is the storage which can memorize and set data regardless of turning on and off of the power source of the body of game equipment, and it is equivalent to the external storage 117 and the auxiliary storage unit 104 of drawing 1 .

[0032] In drawing 4 , a start of a game distinguishes whether the record data of an applicable game are in external memory equipment at step 401. When there are record data, it is step 402, and the record data is read into a buffer 322 from external memory equipment, the value n of the buffer position 321 is set up so that the game data of the last of the record data may be pointed out, and it progresses to step 403. At step 401, when there are no record data, step 402 is skipped, and it progresses to step 403. Record data are game data stored in the buffer 322 in the last game, and are data written in external memory equipment at step 408 mentioned later.

[0033] Next, a game is initialized at step 403. The same reappearance processing shall be performed in initialization processing of this game as steps 308-311 of drawing 3 explained. Automatic reappearance to a location which carried out game termination last time by this from a predetermined

break location which was explained by drawing 2 is performed. After reappearance finishes, the value n of the buffer position 321 shall be positioned in the degree of the location which carried out last game termination in the buffer 322. That is, I hear that it is set as the location which should write in game data next, and it is.

[0034] Processing of the following steps 404-407 is the same as processing of steps 302-305 of drawing 3 (a). A game is performed by processing of steps 404-407, writing game data in a buffer 322.

[0035] When it becomes game termination at step 407, it is step 408 and the contents of the buffer 322 are written in external memory. Next, at step 409, it distinguishes whether a game is continued succeedingly. When progressing to step 411 when continuing a game (namely, when resuming a game), and not continuing, it ends, after processing game over at step 410. Step 409,410 is the same as step 306,307 of drawing 3.

[0036] When continuing a game, steps 411-414 are processed. Processing of steps 411-414 is the same as steps 308-311 of drawing 3 (a), and reappearance processing explained by drawing 2 in the case of continuing a game by these processings without turning off a power source is performed.

[0037] Even when the power source of the body of game equipment is turned off after game termination, in case according to the example of processing of drawing 4 the power source of the body of game equipment is turned on again and the game is resumed, reappearance of a game is performed last time which was explained by drawing 2.

[0038] In addition, you may enable it for the intention of a player to perform the writing and reading of record data to external memory to arbitration in drawing 4. Moreover, in case game data are memorized, you may make it memorize the game data from the break location (211-215 of drawing 2) of processing, although all game data are memorized to the buffer 322, the part reproduced among the memorized game data at the time of a game restart is taken out and he is trying to reappear by the method explained by drawing 2 -4. For that purpose, what is necessary is just to throw away the game data before it, when a predetermined break location is exceeded at the time of a game data storage.

[0039] A player may enable it to choose this location, and when there is no actuation of a player for a long time, you may make it set up a break location dynamically by the method explained by the above-mentioned drawing 2 -4, such as making that location into a break location, although the break locations 211-215 are static locations decided beforehand. Furthermore, it is also possible to make into a break location the location which went back by predetermined from the location which carried out game termination.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing showing the example of a hardware configuration of the game equipment concerning this invention

[Drawing 2] The mimetic diagram showing the situation when resuming the situation when ending a game, and its game

[Drawing 3] Drawing showing the flow chart which shows the example of procedure using the memory inside game equipment, and the buffer which stores game data

[Drawing 4] The flow chart Fig. showing the example of procedure using external memory equipment

[Description of Notations]

100 [— A control unit, 104 / — An auxiliary storage unit, 111 / — A central processing unit (CPU) 112 / — Random access memory (RAM), 113 / — A read-only memory (ROM) 114 / — A Video RAM (VRAM) 115 / — An image control section, 116 / — The speech synthesis section, 117 / — External storage, 118,119 / — I/O (I/O) control section.] — The body of game equipment, 101 — A display (CRT), 102 — A loudspeaker (SP), 103

[Translation done.]

* NOTICES *

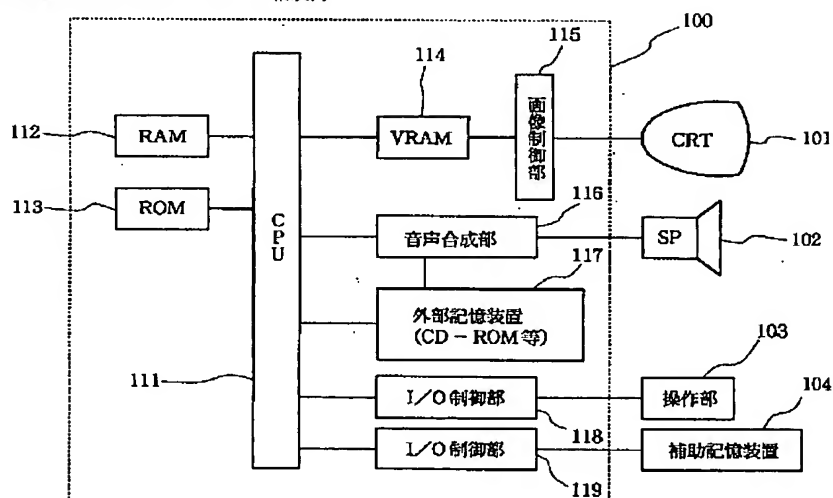
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DRAWINGS

[Drawing 1]

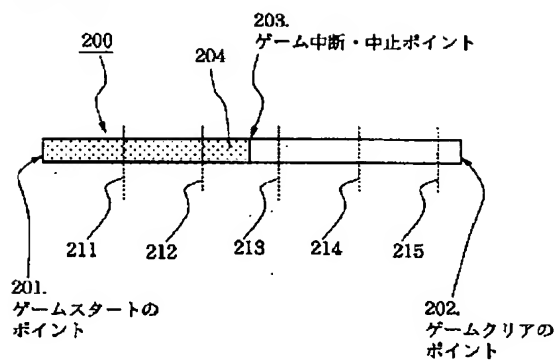
本発明に係るシステムのハードウェア構成例



[Drawing 2]

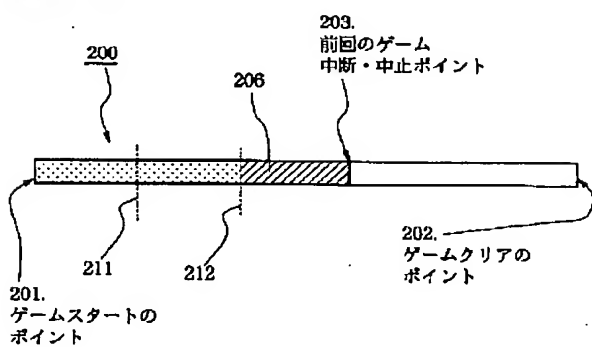
(a)

終了の状況

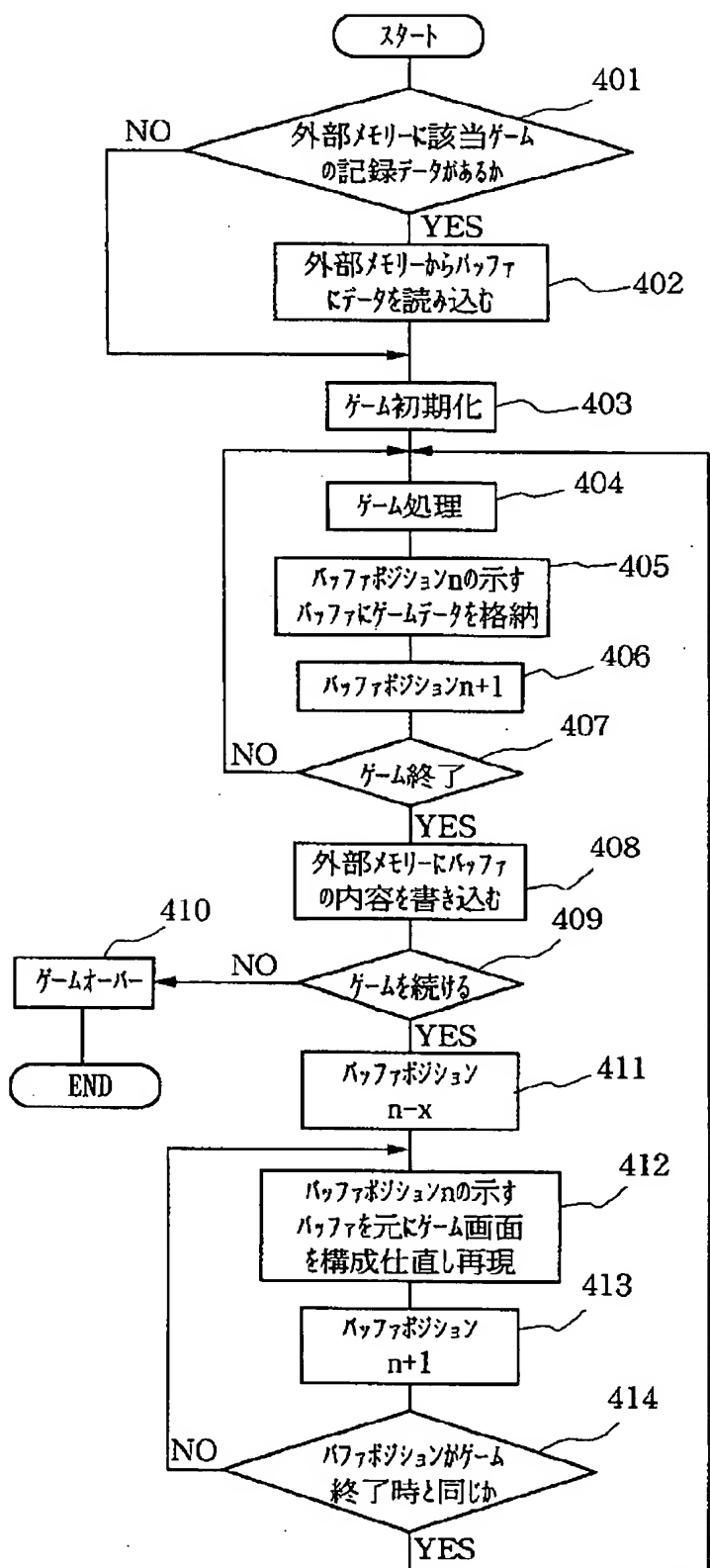


(b)

再開するとき

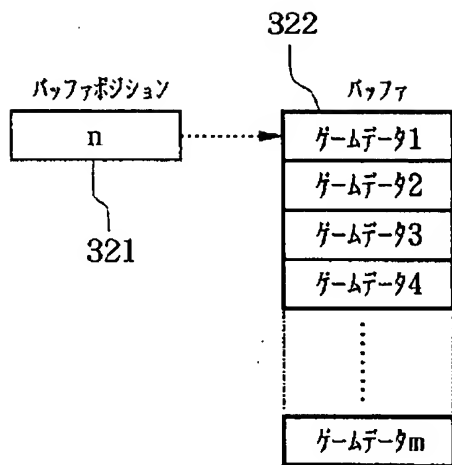


[Drawing 4]

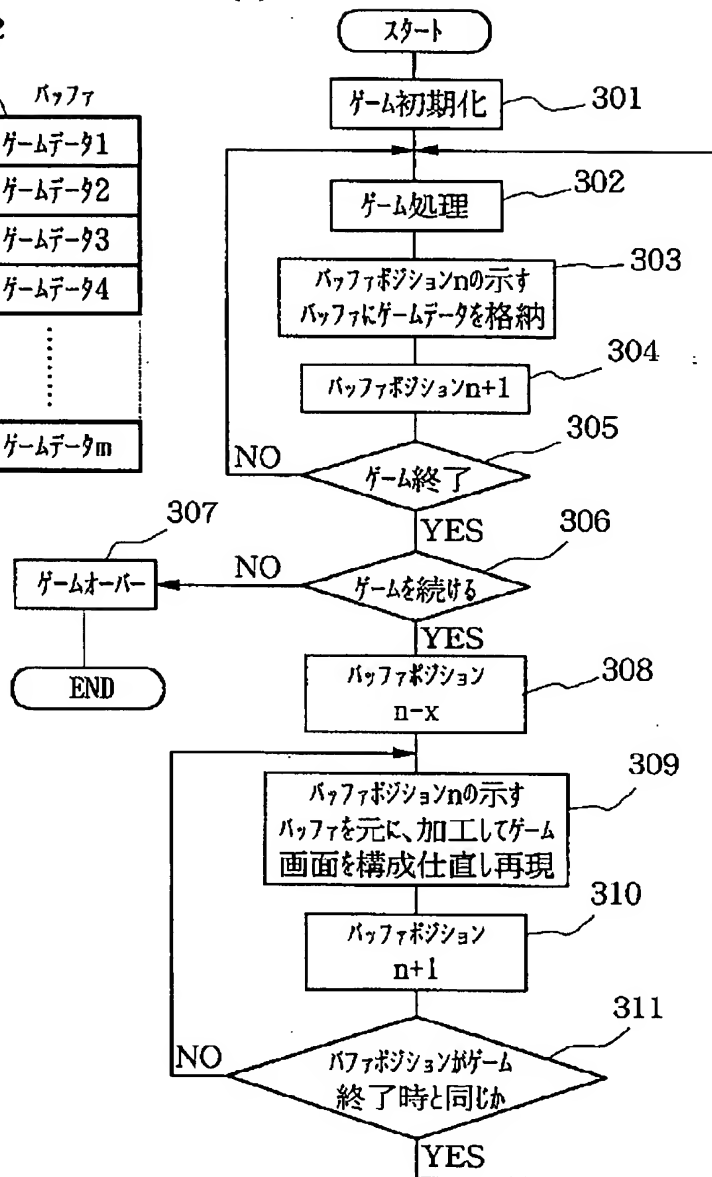


[Drawing 3]

(b)



(a)



[Translation done.]